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NATURAL GAS FOR RURAL ALBERTA

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GUIDELINES TO THE
ORGANIZATION, CONSTRUCTION, ADMINISTRATION & OPERATION
OF RURAL GAS COOPERATIVE DISTRIBUTION SYSTEMS

DEPARTMENT OF TELEPHONES & UTILITIES

MAY, 1973



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INTRODUCTION

The Progressive Conservative Party of Alberta, in its paper "New Directions for Alberta, 1971", undertook "to expand the provision for natural gas to Alberta farms at reasonable costs".

This commitment was in accord with the general conclusion that the Alberta economy should be diversified and spread across the province; that it was in the public interest to improve the economic viability of smaller centers; and that the family farm should be preserved. All Albertans, including those in rural Alberta, deserve a fair share of the benefits enjoyed by the people of this province from their ownership of natural resources.

Towards this end, during 1972 the new Government pursued its pre-election commitment with a Task Force study into the complex problems associated with rural gas and with research into the potentials of plastic and aluminum pipe, into alternative methods of financing, into the economic viability of natural gas systems versus competitive fuels such as propane and fuel oil, into designs and standards, and into organizational structures which would accomplish these objectives.

The Minister of Telephones and Utilities, the Honourable Roy Farran, presented to the Legislature towards the end of April, 1973, Position Paper No. 11 entitled "Rural Gas Policy For Albertans". Copies of this Position Paper are available from the Rural Utilities Branch, Department of Telephones and Utilities, Room 207, Blue Cross Building, 10025 - 108 Street, Edmonton, Alberta, Telephone - (403)429-4204.

The information contained herein is intended to provide persons interested in forming and operating natural gas cooperatives throughout rural Alberta with the basic data required to proceed. The staff of this department, along with the staff of the Cooperative Activities and Credit Union Branch of the Department of Agriculture will be pleased to provide further information and to attend meetings of interested groups towards achieving the objectives of the new policy.

The information provided in this package is intended to provide suggested methods and procedures as well as minimum standards required for the orderly development of safe and properly constructed rural natural gas distribution systems. Since it is impossible at the beginning of this large program to determine all the various requirements, the department will make available to the cooperatives and to the engineering consulting firms and others involved with the rural gas distribution systems, additional information from time to time via circular letters.

Suggestions towards improving the implementation of this program would be most welcome.

NOTE: The comprehensive detail in this guideline booklet may seem frightening at first glance to the layman. We have endeavored to cover as many points as possible.

It may be reassuring to remember that despite the apparent complexity, farmers have been operating some 45 gas cooperatives without difficulty, the first one commencing in 1964.

POLICY HIGHLIGHTS

- * One-fifth of all Albertans are presently not served with natural gas. The policy is intended to bring this service to as many as possible of this group.
- * The Province of Alberta will assist by grant, to a maximum of \$1300 per farm consumer, those services whose per customer costs are between \$1700 and \$3000. The farm consumer is responsible for the capital costs up to \$1700.
- * The Co-op Activities Branch of the Department of Agriculture will guarantee loans up to 85 percent of the member's capital costs up to a maximum 20-year term at one percent over prime rate.
- * A section of the utilities division to be called Gas Alberta will be set up to act as a broker to buy gas from the sources and sell it to the distributors at reasonable cost.
- * Franchise boundaries will be allotted according to the criteria:
 - (a) of a financial per consumer investment of \$3000 if 80 percent of consumers are served
 - (b) of municipal boundaries
 - (c) of natural obstacles
- * Service areas within a franchise boundary may proceed with gas distribution if 66-2/3 percent of potential customers agree to accept gas and it is documented that there was insufficient interest outside this area.
- * Grants of 40 percent of cost, to a maximum of \$250 per customer, will be available to propane or fuel oil users beyond the limits of the area which can be served at a per consumer cost of \$3000.
- * Annual grants of \$15,000 each will be made on a county basis for a utilities coordinator who will assist in the areas of design, standards, inspection and billing where substantial gas distribution systems are operating.

CO-OP FACTS

- * The Cooperative Associations Act came into effect in 1913.
- * The first Cooperative Association in Alberta was incorporated in 1913 by a group of farmers in the Huxley area, who wanted to set up their own retail store. It was unsuccessful because the wholesalers would have nothing to do with a co-op.
- * There are now 2,323 cooperative bodies incorporated in Alberta, including 1,304 cooperative associations, 455 credit unions, 178 marketing associations, and 386 R.E.A.'s that are supplying electricity to 99 percent of rural Albertans.
- * There are presently 46 natural gas co-ops in operation in Alberta serving approximately 4,500 customers.
- * The first gas co-op in Alberta was Park Natural Gas Association Ltd., near Wainwright, incorporated July 4, 1955, with 38 members. It has since become part of the Town of Wainwright gas system.
- * The first gas co-op to make use of plastic pipe was Meota Gas Cooperative Association Ltd., in the Millarville-Priddis area, incorporated June, 1962.
- * The Guarantee Act, under which the co-op loans are guaranteed, was passed in 1946, and amended in 1953 to include gas co-ops.
- * Ste. Anne Natural Gas Co-op Ltd., scheduled for completion in 1973, is the largest operating gas co-op, with over 800 members, and comprises over 355 miles of plastic gas distribution line. Cost of this system is approximately one million dollars.

WHAT IS THE COST OF RURAL NATURAL GAS?

The prospective rural natural gas customer should know what the total cost of obtaining natural gas will be in comparison with his present fuel. The cost of obtaining natural gas service may be divided into three categories, namely:

1. Conversion Cost
2. Construction Cost (Customer Contribution)
3. Gas Cost

As an example, suppose a prospective customer who is already using propane, and whose annual consumption would be 300 MCF of natural gas, decides to convert to natural gas service. His actual cost of gas would include:

1. The cost of converting all his appliances and piping from propane to natural gas. If the conversion cost is \$300 and is paid for in cash, the equivalent cost is 10¢/MCF for the life of the system.
2. If the customer contribution is \$1,700 made up of 15% cash down payment (\$255) and the remaining 85% (\$1,445) financed by guaranteed bank loan at 8% over 15 years, the equivalent cost is 65¢/MCF.
3. If the gas cost to the customer is assumed to be 50¢/MCF, then the total cost of gas service for the 15-year period until the construction loan is repaid will be:

Conversion Cost	10¢/MCF
Construction Cost	65¢/MCF
Gas Cost	<u>50¢/MCF</u>
Total Cost	\$1.25/MCF, or the equivalent of about 14¢/gallon for propane.

After this loan has been repaid, the gas charge rate for the construction cost drops to the cost of the cash down payment of \$255 or an equivalent cost of 8¢/MCF. This gives a total cost of 68¢/MCF or the equivalent of about 8¢/gallon for propane.

The advantages of such a piped gas system are surety of supply, stabilization of consumer costs, less prospect of failure and clean convenient fuel.

AVERAGE COST OF CONVERSION TO NATURAL GAS

	PROPANE	FUEL OIL	COAL
House	25.00 - 60.00	300.00 - 500.00	225.00 - 500.00
Barn*	25.00 - 200.00	500.00 - 700.00	300.00 - 700.00

* Depending on length of black pipe required.

Propane

To convert a propane furnace or stove to natural gas service involves only changing the orifices or having existing propane orifices reamed to suit natural gas. Either operation should cost about 50¢ for each orifice. A new regulator is required but this is supplied by the co-op and is covered by the customers construction fee. Copper tubing used in a propane system must be replaced, either by black iron pipe for piping within buildings or plastic pipe for yard services.

Fuel Oil

Conversion of a fuel oil furnace to natural gas service would not be economic, as it is necessary to buy a complete gun unit which could cost approximately \$400. A complete new natural gas furnace would cost \$300-400. If the existing system is hot water, a decision would have to be based on its individual circumstances, including condition of the existing boiler. The condition of the chimney would also be a factor, as a masonry chimney might have to be relined. Conversion costs will vary with circumstances, but could run as high as \$700, including yard services.

Coal

Conversion of a coal furnace also would not be economic as the cost of modifying a coal furnace would be about as much as a new furnace, and the resulting installation would be quite inefficient. Air ducts would have to be considered, as most existing coal furnaces have gravity hot air systems with one main hot air duct, and new ductwork might be required. Complete cost of conversion might be up to \$700, including new ductwork.

GUIDELINES

General

Until recently, the high cost of gas distribution systems using steel pipe has made it uneconomical to serve most rural areas with natural gas, considering the relatively small volumes required. The introduction of plastic pipe and more efficient line construction methods has now made it feasible to extend natural gas service to rural areas in much the same way as rural electrification has evolved. As a result, the development of rural gas distribution systems has advanced rapidly in areas where a source of supply is readily available. These sources of supply may be gas transmission lines or local gas wells. A common method of providing rural gas service is through the formation of gas cooperative associations which may be wholly-owned by their members, who are also their customers.

These guidelines are presented with a view to assisting rural residents in the formation, construction, administration and operation of gas cooperatives and to acquaint them with the various services which are available from the provincial government. The suggested procedures for the formation, construction and operation of a cooperative gas system have been broken into six steps:

- Step 1: Initiation
- Step 2: Organization
- Step 3: Feasibility Study
- Step 4: Preconstruction
- Step 5: Construction
- Step 6: Administration, Operation and Maintenance

The various points listed under each step need not necessarily be followed in the exact order as listed.

GUIDELINES

Initiation Procedure

1. Interest in obtaining natural gas service in an area will usually arise spontaneously as residents become more aware of its benefits, and realize that it may be within their reach. At some point, an individual, or group should assume the authority to convene a meeting of interested local residents.
2. Appoint a provisional slate of officers, and board of directors.
3. Outline a general area to be served, usually following boundaries of the local taxing authority (county, municipal districts, etc.) or natural boundaries, such as rivers, uninhabited areas or boundaries of existing gas cooperatives.
4. Consult the Rural Utilities Branch of the Department of Telephones and Utilities for preliminary designation of franchise boundaries, explanation of service areas, possible grants, and general procedural information. One of this branch's main responsibilities is to implement the Rural Gas Policy and to provide advice and assistance to prospective and existing cooperatives.
5. Assign districts to be canvassed by directors.
6. Have the directors conduct a telephone survey of their assigned districts to ascertain the extent and degree of interest.
7. Engage an experienced engineering consultant to make a preliminary feasibility study covering sources of gas supply and probable purchase price, construction costs, financing, rate structure, operating revenues and expenses, and the cost of conversion of existing equipment, etc.

(Copies of the "Guide to the Selection of Professional Engineers, Geologists and Geophysicists for Consulting Services" and "Recommended Schedule of Minimum Fees" may be obtained from The Association of Professional Engineers, Geologists and Geophysicists of Alberta, 215 - One Thornton Court, Edmonton, Telephone - 423-3281.)

8. Consult the Cooperative Activities and Credit Union Branch of the Department of Agriculture (9718 - 107 Street, Edmonton, phone 429-5691) for information on incorporation, government guaranteed loans, lien notes, etc.
9. As early as possible, indications should be made to Gas Alberta as to the possible sources of gas i.e. nearest export gas lines, utility gas lines or capped wells. This is to expedite negotiations for purchase and sale of gas.

GUIDELINES

Organization Procedure

1. Call a general meeting of interested residents in the defined area, with the consultant in attendance. Representatives from the Rural Utilities Branch, Co-op Activities Branch, and the Farmers' Advocate may also be present.
2. Decide to incorporate and proceed with a new co-op, or to combine the area with an existing gas cooperative, or to table the matter until more interest in a rural gas system is evident.
3. Elect officers and directors. These should be the most vigorous, public spirited citizens available, well respected in their districts and willing to devote the necessary time to implement the project. Directors elected should represent all areas within the co-op boundaries.
4. Prepare and submit an application for incorporation to the Co-op Activities Branch. (Appendix "A")
5. Following approval of the preliminary franchise boundary by the Rural Utilities Branch, authorize an engineering consultant to conduct a full scale design and economic feasibility study.
6. Decide on a method of interim financing to defray cost of consultant's fees and directors' disbursements. (Possibly obtaining deposits of say \$25 from prospective members, to be credited against construction contributions.)
7. Select a financial institution, preferably a local branch of a chartered bank or treasury branch.

NOTE: Points 4-7 may be handled at the general meeting, or left to the discretion of the newly elected Board of Directors.

GUIDELINES

Feasibility Study

One of the main factors on which the progress of the co-op will depend is the feasibility study. This study is prepared by an experienced engineering consultant who is retained by the co-op to provide the detailed engineering design and economic analysis of the proposed system. In addition to providing the feasibility study, this consultant could also provide the necessary project management and engineering supervision and inspection throughout the construction of the system.

The feasibility study should contain these components:

1. Area - This will include a topographic map of the proposed service area, showing location and extent of the proposed system and specifying boundaries, with reference to adjacent service areas, and an indication of areas for future expansion.

2. Market Potential - Should contain an analysis of the number of potential customers, broken down by classification i.e., rural or urban, possibly with subclassifications such as permanent urban, summer villages, industrial, communal settlements, or any other classifications which may be significant.

3. Design Capacity - This will include an estimate of total energy consumption rates, e.g. maximum daily volume, average daily volume, and annual load. Basis for flow calculations, with initial and final pressures should be indicated. The capacity of the total system shall be designed to serve 100 percent of the potential customers within the franchise boundary. Population trends for the next ten years with a forecast for increased individual usage must be taken into account.

4. Source - This should include an analysis of the source, quality, cost and adequacy of the gas supply, along with estimates of initial and ultimate requirements. If pipe lines are the source, it will include the owner and size of the line, with the number and location of proposed taps, and the amount and size of the high pressure line to connect to the distribution system. If gas wells are the

proposed source, it should include the owner(s), location(s), all pertinent engineering data, and an estimate of wellhead equipment requirements. This section should also make provision for auxiliary sources to meet peak seasonal demand. The co-op's gas supply shall be purchased through the broker, Gas Alberta.

5. Capital Cost Projection - This will include all costs, broken down into the following general categories:

(a) Construction Costs - This should cover the cost of materials and installation for all components of the rural gas system including high pressure pipe line, measurement and regulating facilities. Where wells are the supply source, cost of placing these wells in production should be included.

Costs for various types of services, e.g. rural, urban, summer villages, etc. should be broken out.

(b) Construction Overhead Costs - This will include the costs of engineering, accounting, supervision, and inspection, with an allowance for contingencies.

(c) Additional and/or incremental costs required for service to industries, municipal systems, and other heavy users, should be segregated.

On the foregoing points, monthly projections are required during the main construction period and yearly projections for the initial ten years of operation.

6. Financing of Capital Costs - This will include a monthly projection of the construction expenditures and monthly projection of possible grants available through the Rural Gas Policy along with member capital contributions during the main construction period and yearly projections for the initial 10 years of operation.

7. Operating Cost Projection - This should include recommendations and estimates for all operation and maintenance costs such as:

(a) Personnel - This will outline the number, duties and qualifications of the personnel required to operate the completed system, with provision for emergency procedures.

(b) Administration and Accounting - This will include recommendations concerning office and warehouse requirements, service application processing and accounting and billing procedures. A standardized billing service will be available from Gas Alberta.

(c) Equipment - This will include the cost of vehicles, test apparatus, tools, repair materials, etc.

(d) Other cash operating costs associated with the operation and maintenance of the system should be itemized.

(e) Non-cash operating costs such as depreciation and amortization should be considered and the co-op's policy regarding these expenses should be clearly stated.

(f) It should be noted that operating and maintenance costs for the high pressure measurement and main high pressure pipe line facilities (excluding any lateral taps) are included in the cost of gas from Gas Alberta. Capital costs are not, and are included in the overall cost of the distribution system.

On the foregoing points, monthly projections are required for the first two years of operation and yearly projections for the next eight years.

8. Revenue Projection - This should include a proposed schedule of rates, outlining minimum billings and gas rates at various levels of consumption, meter and hookup charges, and service charges. Anticipated levels of revenue should be projected each month for the first two years and yearly for the following eight years.

9. Financial Statement Projection - This will include balance sheets, income statements, and source and use of funds statements for each year of the initial ten years of operation.

The feasibility study and final system design must be submitted to the Rural Utilities Branch for approval prior to proceeding with construction of the system. A suggested format is contained in Appendix "B", Feasibility Study.

GUIDELINES
Preconstruction Procedure

1. Launch a vigorous market survey by directors in assigned areas to obtain deposits to finance the feasibility study, commitments, or refusals. (Appendix "C")
2. Hold regular directors' meetings as needed, including progress reports on the market survey and feasibility study. Other co-ops have found that one meeting per week is necessary until the system is well under construction.
3. Upon completion of the feasibility study, it must be submitted to the Rural Utilities Branch for review and approval after which the directors should decide on the method of financing construction costs, and gas rate structure.
4. Obtain lien notes (Appendix "D"), gas service contract forms (Appendix "E") and easement forms (Appendix "F") from the Co-op Activities Branch, and arrange for loan guarantees.
5. Launch an enthusiastic sales campaign, signing up customer contracts, obtaining lien notes and easements, and collecting construction down payments to be held in trust.
6. Arrange for a gas purchase contract with Gas Alberta. (See Appendix "G")
7. Arrange for the necessary permits as outlined under "Permit Requirements", which follow.

Permit Requirements .

1. Pipe Line Division - Before commencing construction, a permit must be obtained from the Pipe Line Division of the Energy Resources Conservation Board (603 Sixth Avenue S.W., Calgary, T2P 0T4) whose function it is to carry out the duties assigned under The Pipe Line Act. The intent of the Act is to ensure that the safety of the public is protected in the design and operation of pipe lines installed wholly within the province and, as well, to achieve an orderly development of the pipe line industry in Alberta.

Procedure

- (a) Have an authorized agent (usually the engineering consultant) apply for a permit to construct and test the system. Forms for this application are appendices to copies of The Pipe Line Act. Form "A" is an application for the permit to construct. Form "B" is the specification sheet describing the system applied for in Form "A". (Appendix "H")
- (b) The application must be accompanied by a list of the names of owners and occupants of all the land traversed by the system.
- (c) The application must also be accompanied by a proposed plan of the system on a scale of not less than 1" - 2 miles (four copies).
- (d) All applications are reviewed by the Board for compliance with established design and safety codes and, in certain cases, are referred to the Department of the Environment and Department of Lands and Forests for their approval of the applications as they affect matters of the environment. Also, in cases where the application may directly or adversely affect the rights of an individual, a notice for objection may be published, or a public hearing may be held before the decision on the application is made.

- (e) The Act also requires that when constructed, the pipe line be licensed to operate. As part of the permitting procedure, the Board issues testing conditions which must be complied with. The actual tests are witnessed by the Board's Pipe Line Inspectors and, upon satisfactory completion, a temporary or provisional operating licence is issued. The co-op must then make application to license the line by submitting as-built plans and specifications in order to receive their permanent licence. Small variations from the proposed plans which have been made to accommodate conditions of terrain may be permitted.

2. Gas Protection Branch

The portion of a gas installation downstream of the customer meter is the customer's own responsibility, including conversion of existing equipment to natural gas service. This comes under the jurisdiction of the Gas Protection Branch, Department of Manpower and Labour, whose requirements may be summarized as follows:

(a) Gas Piping and Installation Permits - Installation of gas piping on private property and/or in privately owned buildings under provincial inspection jurisdiction may be done either by:

- i. A Certified Gas Fitter - eligible to obtain installation permits, in which case he is responsible for obtaining the permit (not the property owner).
- ii. The Property Owner - a residential property owner's permit application is available to a person who both owns and occupies the residence (includes other farm buildings) when the complete installation will be made solely by the applicant.

These applications are issued only on an individual basis to each owner by writing or phoning the Gas Protection Branch, IBM Building, 10808 - 99 Avenue,

Edmonton (phone: 229-3789). A personal call will result in immediate processing of the application.

NOTE: Due to the many technical aspects involved in a gas installation, it is strongly recommended that the property owner, unless he has considerable experience in this line of work, obtain the services of a certified gas fitter who is required to complete the installation to meet code regulations and requirements.

- iii. The Contractor Installing the Distribution System - may obtain installation permits to cover that part of the service line on the property of the ultimate consumer.

NOTE: A gas installation permit is required to cover each such service line.

(b) Piping Air Tests - Regulations require an air test on building piping including plugged individual applicant shutoff valves (gas cocks) of a minimum 10 lbs. for a minimum time of ten minutes with no drop in pressure, following which the air is to be left in the line for the utilities or the co-op's meter setter to check before setting the meter and introducing gas into the building piping system.

(c) Meter Sets - An approved (white) copy of the Provincial Gas Installation Permit must be procured by the supply utility (or co-op) agent prior to installing the meter and providing a gas supply. This permit must be kept on file and produced at the request of the Provincial Gas Inspector.

NOTE: Future additions or alterations require additional permit coverage.

3. Department of Consumer and Corporate Affairs
(Government of Canada)

All measurement equipment, such as meters, meter runs and compensating devices used for billing purposes must be tested

and sealed by an inspector from the Department of Consumer and Corporate Affairs before installation. Normally, all these devices must be recalled for testing every six years, and any required repairs or adjustments made. They are then tested and resealed and may be put back into service.

Where Pressure Factor measurement is used, plans of the installation must be submitted to this Department for approval, and permits are issued on an individual basis. Regulators used in such installations must be sealed by the Department.

4. Additional Authorizations

Depending upon the route traversed by the distribution system, authorization may be required from other government departments. For example, crossing of numbered highways and bridges requires authorization from the Department of Highways and Transport; and rivers, from the Department of the Environment. Municipal road crossings require permission from the local municipal authority. Similarly, in irrigated areas, permission for crossings must be obtained from the local irrigation authority. Special permission is also required for crossing of railways and telephone cables.

It is imperative that owners of all pipe lines, particularly high pressure oil and gas pipe lines be contacted for permission prior to crossing their lines. It is common practice in the industry for the owners of these lines to locate, and witness the hand exposing and crossings of their lines by others.

Obtaining of permits and other authorizations is usually the responsibility of the consultant. The Rural Utilities Branch will assist, where possible, in expediting the granting of these permits.

5. Records

A set of the co-op's as-built drawings, including all revisions, must be submitted to the Rural Utilities Branch within 60 days after construction completion.

GUIDELINES

Construction

It might appear that setting of high standards (Appendix "I") and establishing of rigid construction specifications do not apply to rural gas systems - the opposite is true. In becoming part of a gas distribution system, the rural consumer is dependent on the system to provide him with continuous and trouble-free service. Servicemen and repair equipment are not as readily available in rural areas. Most important, the safety, reliability and life of the system are largely related to the quality of material, workmanship and construction techniques.

For these reasons, an engineering consultant should be engaged to prepare a detailed construction contract document so that contractors can submit their best bid and know all the terms and conditions of the contract. Lack of a detailed construction contract can lead to misunderstandings, extra costs and possible legal complications.

A typical pipe line construction contract document contains the following:

1. Invitation to Bid

This is a detailed job description which becomes part of the eventual contract. It is forwarded to bidders to describe the scope of the work, approximate footages of pipe, pipe sizes, casing, crossings, service connections, etc. Material supplied by the co-op and location of supply points should be covered.

Information required of the bidder should include:

- (a) schedule of prices and firm contract price
- (b) list of labour and equipment rates for extra work
- (c) list of subcontractors to be employed
- (d) list of equipment available
- (e) a bid bond of a responsible and reliable surety company authorized to carry on business in the Province of Alberta

The successful bidder must provide a detailed work schedule showing commencement and completion dates, a performance bond and certified copies of insurance policies showing placement and insurance as required. Terms of payment and provisions of the Builders' Lien Act should also be included in this section.

2. The General Conditions

This section covers the role and responsibilities of the contractor and owner and should encompass these areas:

- (a) method of work performance
- (b) authorized representatives
- (c) material and equipment
- (d) payment for changes and extra work
- (e) inspection
- (f) supervision by contractor
- (g) subcontracts and Joint Ventures
- (h) permits and licenses
- (i) injuries and damages
- (j) insurance
- (k) payment of bills
- (l) title to system
- (m) Force Majeure
- (n) guarantees and performance bonds
- (o) final acceptance of work

3. The Construction Specifications

This section should contain a detailed description of construction techniques for rural gas systems. The scope of this section should cover these areas:

- (a) right-of-way
- (b) unloading, storing, hauling and handling of material
- (c) methods of installing steel, aluminum and plastic pipe with a particular emphasis on plowing techniques
- (d) winter, swamp and muskeg construction

- (e) methods of crossing roads, railroads and highways
- (f) methods of crossing bridges, canals, rivers, streams, irrigation ditches, pipe lines and telephone cables
- (g) methods of fusing plastic pipe and fittings
- (h) method of joint connection
- (i) cathodic protection
- (j) control valves, design and location
- (k) requirements for tracer wire
- (l) backfill
- (m) system testing, purging and startup
- (n) cleanup

4. Typical Drawings

The following drawings should form part of the construction contract:

- (a) map of pipe line distribution system
- (b) detail of high and low pressure, measurement and regulation stations.
- (c) road, railroad, pipe line, cable, stream or other crossings
- (d) farm service
- (e) urban service
- (f) pipe and fitting connections
- (g) tracer wire installation
- (h) riser and valve installation

5. Standards

The Standards and Legislation to be followed in the development of rural gas systems are outlined in Appendix "I".

6. Damage Claims

Although most co-op members will feel that reasonable damage to crops is part of their contribution to the overall welfare of the project, in some cases excessive damages will occur and compensation

should be made. It has been found that an equitable method of assessing these damages is by means of a committee comprising the landowner, the director responsible for the area, and one disinterested party. The Farmers' Advocate might act in the latter capacity, if required.

7. Government Grants

As construction proceeds, application may be made to the Rural Utilities Branch for progress payments on grants to be made under the Rural Gas Policy. Progress payments may be made up to 75 percent of the total projected amount of grants after 50 percent of the construction in a service area has been completed. Application for progress payments must be accompanied by an interim accounting of construction costs, including costs of inventory, and documentation by inspectors that the work conforms to the standards in the foregoing section 5 (Standards).

Upon completion of construction in any service area, application may be made for the balance of grants available under the policy. This must be accompanied by documentation of acceptance of the system by the co-op, and a complete, audited, financial statement of construction costs.

Application forms for this purpose will be available through the Rural Utilities Branch.

Another method of constructing a rural system is through a "turn-key" service where an engineering contractor provides a complete package of feasibility study, design, project management and construction. Although the format of documents and procedures differ somewhat from the foregoing example of a typical pipe line construction contract, the same issues and areas of concern apply. Where the "turn-key" service is used, it is common practice in industry to employ third party inspection.

The role of the county utility coordinator will include inspection of rural gas systems during the construction and operation phases.

GUIDELINES

Administration, Operation and Maintenance1. Administration and Accounting

During the organizational and construction stages, it is most important that a complete set of financial and other records be kept. As soon as possible after incorporation, provision should be made for the services of an accountant, either a member with this type of experience, or on a consulting basis. Prior to placing the system in service, the following items should be included in a co-op accounting system:

(a) A member contribution journal - This should be simply a chronological list of member payment, i.e. payments toward the capital cost of the gas system. Entries should be made in this book as payments are received.

(b) A cheque journal and synoptic - This is a chronological list of all cheques that are written. This journal should also provide columns so that payments can be charged to various expense and capital accounts.

(c) An invoice journal and synoptic - This is a chronological record of all invoices that are received by the co-op. This should also provide columns so the invoices can be charged to various accounts.

(d) A member ledger - This is a book with a page provided for each member, on which the payments and charges to the member will be shown.

(e) An accounts payable ledger - This is a ledger with a page provided for each creditor on which invoices and payments are listed.

(f) A general ledger - This will include all accounts of the co-op, with a page for each capital, expense or other account. This ledger should be brought up-to-date monthly, with entries from the cheque, invoice, and member contribution journals.

(g) A minute book - This is a permanent record of proceedings at all meetings of the Board of Directors and general meetings. The minutes of each meeting should be initialed by the President and

Secretary when they are approved at the following meeting. Strict rules of parliamentary procedures should be followed at all meetings.

2. Meter Reading and Billing

Once the co-op starts operation, a meter reading and billing procedure must be established. Due to the nature of rural gas systems it may be desirable to have the customers read their own meters, with occasional checks by the co-op service personnel. Bills will usually have a tear-off section with a reproduction of a meter register, on which the customer marks the position of the hands. These are sent in along with the remittance for the previous month's bill.

A computerized program for billing service will be available through Gas Alberta, at the option of the co-op. If the co-op elects to set up its own program with a computer centre, monthly gas sales volumes must be reported to Gas Alberta for administration of the government's two-price rebate system for natural gas as announced in its "Statement of New Natural Gas Policies for Albertans" dated November 16, 1972.

The master meter(s) through which the co-op purchases its gas from the source will be read by the vendor and bills for gas purchases will be processed and rendered by Gas Alberta.

3. Operation and Maintenance

Administering and operating a large co-op needs competent management. As soon as possible after approval of the feasibility study and the decision to proceed with construction is made, a co-op manager should be hired. Every attempt should be made to procure the services of a person experienced in the construction and/or operation of a gas utility. During construction, the co-op manager may act in the capacity of supervisor-inspector and should take every opportunity to become thoroughly familiar with every detail of the system, as well as becoming acquainted with the directors and members. The manager's background should include some degree of expertise in the following areas:

- (a) Materials used in the system, particularly material properties, methods of installation and gas fitting procedures.
- (b) Regulation and metering equipment, including regulator station equipment; domestic meter set installation, maintenance, and reading; and all other associated instrumentation.
- (c) Use of instruments and gauges such pipe locators, explosion meter, manometer, H₂S tester, odorometer, leak detection devices, etc.
- (d) Leak location, testing and emergency repair procedures, including repair of special equipment, such as regulators, valves, dehydrators, etc.
- (e) Methods of pressure testing, purging and deicing lines.
- (f) Safety precautions and first aid.
- (g) Rudiments of surveying and legal aspects of easements, damage claims, insurance, etc.
- (h) Public relations, including liaison with government departments and agencies such as the Rural Utilities Branch, Pipe Line Division, Gas Protection Branch, the Cooperative Activities & Credit Union Branch, and the Farmers' Advocate.
- (i) Properties of natural gas and odorization methods.
- (j) Record keeping and collection of accounts.
- (k) Care and maintenance of vehicles, tools and equipment.
- (l) Training and supervision of junior personnel.

In many cases, a person thoroughly conversant with every aspect will not be available. It is the intention of the Rural Utilities Branch to organize training courses in all aspects of rural gas distribution; but on an interim basis it may be necessary to have the co-op's consultant provide the necessary expertise to keep the system in good operation.

An operating procedure should be established by the co-op manager and their consultant to cover these areas:

- (a) Scheduled inspection of gas piping in public buildings such as schools, hospitals, churches, theatres, hotels, and community halls.
- (b) Scheduled inspection for leak detection in transmission and distribution systems.
- (c) Routine inspections for maintenance and repair of equipment such as valve boxes, risers, regulators, service line entrances and meter connections.
- (d) Emergency measures to handle fires, personnel accidents, abnormal pressure conditions, complete gas failures, etc.
- (e) Discontinuance of service, service line alterations, customer change of premise, meter readings.
- (f) Meter recalls and inspection.

4. System Extensions and Revisions

It will not always be possible to complete the entire system in the first year. It may also be necessary to revise the boundaries of the service area to accommodate adjacent unserved districts. New members in the service area who refused in the first sales campaign will apply for service, and existing services may be moved or discontinued. It will be necessary for the consultant to update the Feasibility Study to reflect existing conditions, and if necessary, revise subscription fees and possibly gas rates, in consultation with the Board of Directors.

Revisions of service area boundaries must be made by application to the Rural Utilities Branch. System additions not covered by the original permit or licence from the Pipe Lines Division must be processed in the same manner as the original application.

Service areas are revised using somewhat the same procedure as established for the setting up of a new co-op. Directors are appointed and assigned to serve new areas. Applications are made to the Rural Utilities Branch for definition of boundaries, approval of feasibility study, etc.

It is essential that detailed records and drawings of the system be updated and maintained by the co-op. The Rural Utilities Branch requires notification and drawings of all system modifications. This is in addition to the present notification required by existing regulatory groups such as the Pipe Line Division and Gas Protection Branch.

After the first stage has been completed and in service, the work load on the original Board of Directors should taper off considerably. Unfortunately, the degree of expertise they have acquired in the gas distribution business will appear to have little outlet other than routine matters. However, they can perform a valuable service to this program by passing on the benefits of their experience to other rural Albertans who wish to avail themselves of this clean convenient fuel through the Rural Gas Policy.

NATURAL GAS FOR RURAL ALBERTA
INDEX TO GUIDELINES SUPPLEMENTS

SUPPLEMENT NO.	DATE ISSUED	SUBJECT	SUPERCEDES SUPPLEMENT NO.
1	June 15/73	Service Connection Line - Definition	
2	June 28/73	Consumer Owned Facilities - Definition	
3	June 15/73	Capital Cost Separation - Services c/w Revised Schedules for Feasibility Studies	
4	June 15/73	Right-of-Way Damages	
5	June 15/73	High Pressure Line - Definition	
6	June 15/73	Father-Son Consumers	
7	June 15/73	Calculation of Grant	
8	June 15/73	Consumers Passed, Connected and Revenue Projection	
9	June 25/73	Feasibility Study Drawing Submission Requirements for Preliminary Approval	
10	June 26/73	E.R.C.B. Gas Co-operative Permit Approvals Proposed Interim Procedure	
11	July 10/73	E.R.C.B. Meeting of July 5/73 Concerning Suitability of Aluminum Pipe for the Distribution of Natural Gas	
12	July 16/73	E.R.C.B. Interim Directive No. ID-PL 73-1 Polyethylene Plastic Pipe for Natural Gas Service	

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES SUPPLEMENT NO. 1

JUNE 15, 1973

SUBJECT: SERVICE CONNECTION LINE - DEFINITION

In order to assist in the preparation and analysis of feasibility studies submitted to the Rural Utilities Branch, the following definition of a Service Connection Line is recommended:

"A Service Connection Line is the piping which extends from a tee, wye or similar fitting on a Distribution Line or from a single service tap on a Transmission Line, to the regulator and meter assembly on the consumer's property."

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES SUPPLEMENT NO. 2

JUNE 28, 1973

SUBJECT: CONSUMER OWNED FACILITIES - DEFINITION

In order to assist in the preparation and analysis of feasibility studies submitted to the Rural Utilities Branch, the following definition of Consumer Owned Facilities is recommended:

"Consumer Owned Facilities is the piping which extends from the regulator and meter assembly on the consumer's property to his appliances."

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES SUPPLEMENT NO. 3

JUNE 15, 1973

SUBJECT: CAPITAL COST SEPARATION - SERVICES C/W REVISED SCHEDULES FOR
FEASIBILITY STUDIES

In order to assist in the preparation and analysis of feasibility studies submitted to the Rural Utilities Branch, it is recommended that the Total Capital Cost of Service Connection Lines be calculated and shown separately from the Capital Costs of Transmission Lines and Distribution Lines.

It is further recommended that the Capital Cost for Rural Service Connection Lines and Urban Service Connection Lines be calculated and shown separately.

The attached revised formats of Schedule 1, Schedule 6 and Schedule 7 (each dated June 15, 1973) reflect the recommended separation of the Capital Costs for Service Connection Lines from the Distribution Line and Transmission Line Capital Costs. In addition, the revised Schedules present other information in a more logical sequence.

SCHEDULE 1

CONSTRUCTION SCHEDULE AND EXPENDITURES

SYSTEM:

1. TRANSMISSION

- 1.1 Total Transmission Miles In Area _____
- 1.2 Transmission Miles Completed _____
 - (a) Period _____
 - (b) Cumulative _____
 - (c) Cumulative % Of Total _____
- 1.3 Total Transmission Cost In Area _____
- 1.4 Transmission Cost Per Mile _____
- 1.5 Transmission Cost Expended _____
 - (a) Period _____
 - (b) Cumulative _____
 - (c) Cumulative % Of Total _____

2. DISTRIBUTION

- 2.1 Total Distribution Miles In Area _____
- 2.2 Distribution Miles Completed _____
 - (a) Period _____
 - (b) Cumulative _____
 - (c) Cumulative % Of Total _____
- 2.3 Total Distribution Cost In Area _____
- 2.4 Distribution Cost Per Mile _____
- 2.5 Distribution Cost Expended _____
 - (a) Period _____
 - (b) Cumulative _____
 - (c) Cumulative % Of Total _____

3. SERVICES

- 3.1 Total Services In Area _____
- 3.2 Services Completed _____
 - (a) Period _____
 - (b) Cumulative _____
 - (c) Cumulative % Of Total _____
- 3.3 Total Services Cost In Area _____
- 3.4 Services Cost Per Service _____
- 3.5 Services Cost Expended _____
 - (a) Period _____
 - (b) Cumulative _____
 - (c) Cumulative % Of Total _____

4. TOTAL

- 4.1 Total Construction Cost In Area _____
- 4.2 Construction Cost Expended _____
 - (a) Period _____
 - (b) Cumulative _____
 - (c) Cumulative % Of Total _____

SCHEDULE 6A

TRANSMISSION CONSTRUCTION COSTS

SYSTEM:

1. TRANSMISSION

1.1	Metering			
	(a) Taps	 @	/tap	.....
1.2	Pipe Steel			
	(a) 1½"	mi@	/mi.	.....
	(b) 2"	mi@	/mi.	.....
	(c) 3"	mi@	/mi.	.....
	(d) 4"	mi@	/mi.	.....
1.3	Special Charges			
	(a) Road Crossings	..... @		.....
	(b) Hi-way Crossings	..... @		.....
	(c) Pipeline Crossings	..... @		.....
	(d) Railway Crossings	..... @		.....
	(e) Other Crossings	..... @		.....
1.4	Land			
	(a) Survey	mi@	/mi.	.....
	(b) Easements	mi@	/mi.	.....
1.5	Other			
	(a) .....			.....
	(b) .....			.....
1.6	Total Transmission Material And Labour Cost			.....
1.7	Right-of-way Damages Contingency	 % of 1.6		.....
1.8	General Contingency	 % of 1.6		.....
1.9	Engineering & Overhead	 % of 1.6		.....
1.10	TOTAL TRANSMISSION CAPITAL COSTS			.....
1.11	TOTAL TRANSMISSION MILES			.....
1.12	TRANSMISSION COST PER MILE			.....

DISTRIBUTION CONSTRUCTION COSTS

SYSTEM

2. DISTRIBUTION

2.1 Regulation			
(a) Stations	 @	/stn	.....
2.2 Pipe Aluminum			
(a) 3/4"	mi@	/mi.	.....
(b) 1"	mi@	/mi.	.....
(c) 1½"	mi@	/mi.	.....
(d) 2"	mi@	/mi.	.....
SUB TOTAL	 mi		
2.3 Pipe Polyethylene			
(a) 3/4"	mi@	/mi.	.....
(b) 1"	mi@	/mi.	.....
(c) 1½"	mi@	/mi.	.....
(d) 2"	mi@	/mi.	.....
(e) 2½"	mi@	/mi.	.....
SUB TOTAL	 mi		
2.4 Special Charges			
(a) Road Crossings	..... @		.....
(b) Hi-way Crossings	..... @		.....
(c) Pipeline Crossings	..... @		.....
(d) Railway Crossings	..... @		.....
(e) Other Crossings	..... @		.....
2.5 Land			
(a) Easement Regist.	 @	/ease.	.....
2.6 Other			
(a)	.....		.....
(b)	.....		.....
2.7 Total Distribution Material And Labour Cost			.....
2.8 Right-of-way Damages Contingency	 % of 2.7		.....
2.9 General Contingency	 % of 2.7		.....
2.10 Engineering & Overhead	 % of 2.7		.....
2.11 TOTAL DISTRIBUTION CAPITAL COST			.....
2.12 TOTAL DISTRIBUTION MILES			.....
2.13 DISTRIBUTION COST PER MILE			.....
2.14 TOTAL RURAL CONSUMERS			
2.15 RURAL CONSUMERS PER DISTRIBUTION MILE			

SCHEDULE 6C

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SERVICES CONSTRUCTION COSTS

SYSTEM:

3. SERVICES () (1)

3.1	Pipe Polyethylene			
	(a) 3/4"	mi@	/mi.	
	(b) 1"	mi@	/mi.	.....
3.2	Special Charges			
	(a) Road Crossings	..... @		.....
	(b) Hi-way Crossings	..... @		.....
	(c) Pipeline Crossings	..... @		.....
	(d) Railway Crossings	..... @		.....
	(e) Other Crossings	..... @		.....
3.3	Land			
	(a) Easement Regist.	 @	/ease.....	
3.4	Service Connection			
	(a) Meter, Regulator			
	Assembly	 @	/conn.....	
	(b) Meter Protection	 @	/prot.....	
3.5	Other			
	(a) .....			.....
	(b) .....			.....
3.6	Total () Services Material and Labour Cost			.....
3.7	Right-of-way Damages Contingency	 % of 3.6		.....
3.8	General Contingency	 % of 3.6		.....
3.9	Engineering & Overhead	 % of 3.6		.....
3.10	TOTAL () SERVICES CAPITAL COSTS			.....
3.11	TOTAL () SERVICES			.....
3.12	() SERVICES COST PER SERVICE			.....
3.13	TOTAL () SERVICES MILES OR FEET			.....
3.14	() SERVICES COST PER MILE OR FOOT			.....
3.15	AVERAGE SERVICE LINE LENGTH MILES OR FEET			

Note (1) USE SEPARATE SHEET FOR RURAL, URBAN, OTHER AND ALL

JUN 15/73

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SCHEDULE 7

CONSTRUCTION COSTS SUMMARY

SYSTEM:

1. SUMMARY

1.1 Transmission	
(a) Capital Cost	.....
(b) Miles	.....
(c) Cost Per Mile	.....
1.2 Distribution	
(a) Capital Cost	.....
(b) Miles	.....
(c) Cost Per Mile	.....
1.3 Services (Total)	
(a) Capital Cost	.....
(b) Services	.....
(c) Cost Per Service	.....
1.4 Total Capital Costs	
(a) 100 % Penetration	.....
(b) 80 % Penetration	.....
(c) 66.7% Penetration	.....
(d) Expected Penetration	%

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES SUPPLEMENT NO. 4

JUNE 15, 1973

SUBJECT: RIGHT-OF-WAY DAMAGES

It is recommended that a Right-of-Way Damages Contingency Fund be included in the Capital Cost estimate under each of the following categories:

1. Transmission
2. Distribution
3. Services

This Contingency should be calculated as one per cent (1%) of the Total Material and Labour Cost in each category.

As is the case with the General Contingency allowance, the Right-of-Way Damages Contingency is considered a fund from which payments can be made only with the express approval of the Co-op management.

It is suggested that the legitimate claims of non-members should be settled as the first priority at a rate not exceeding sixty dollars (\$60.00) per acre and assuming no more than 2 acres of right-of-way per mile of line.

It is further suggested that the legitimate claims of members should be settled upon the completion of construction and only after all non-member claims have been settled. If the Right-of-Way Damages Contingency Fund is not sufficient to settle member claims at the maximum rate of \$60.00 per acre, a reduced rate should be used to allocate the balance remaining in the Contingency Fund among all the member claimants in proportion to their claims.

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES SUPPLEMENT NO. 5

JUNE 15, 1973

SUBJECT: HIGH PRESSURE FACILITIES

General

The intent of the Rural Gas Policy Paper is that all high pressure facilities shall be operated and maintained by an operator appointed by Gas Alberta. The following will define what is meant by high pressure facilities and the procedures to be followed for construction, operation and maintenance.

Definition of Facilities

Due to the multiplicity of probable designs, some specific cases may have to be decided on an individual basis, however, most cases will fall within the following definitions;

1. When gas is metered prior to regulation of the source pressure, the high pressure facilities will include all facilities from the source up to and including the equipment in the station or stations where the gas pressure is first regulated.
2. When the source pressure is regulated prior to the gas being metered, the high pressure facilities will include all facilities up to and including the equipment in the station or stations where the gas is metered.
3. In all cases the high pressure facilities will include all odorization equipment, first stage regulation, and master metering stations and all equipment therein.

Design and Construction Procedures

1. The Consultant will include the design and estimated cost of all high pressure facilities in their preliminary system design.
2. The Consultant will submit preliminary design to the Rural Utilities Branch (the Branch) for tentative approval. If the design is accepted, the Consultant will provide the Branch with (5) five copies of the design.
3. The Branch will appoint an operator, who will be responsible for the operation and maintenance of the completed high pressure facilities. The Branch will notify the operator of the appointment, in writing, informing them of the Consultant responsible for design and providing (2) two copies of the design.
4. The Consultant must obtain approval of the design of high pressure facilities from the operator or obtain standard designs from the operator for inclusion in the final design.
5. The Consultant will submit the final design to the Branch for approval. This design must be accompanied with a minimum of (3) three bids for the construction of the high pressure facilities. In all cases the operator must be given the opportunity to bid on all high pressure facilities.
6. The Contractor will enter into a contract with the Co-operative for construction of the facilities, and will proceed with due diligence to construct the approved facilities.
7. During construction of the high pressure facilities, the operator will have the right of inspection and the right to halt construction if the facilities are not being constructed in accordance with specifications.

Operation of Facilities

1. The operator will enter into a contract with Gas Alberta for the operation and maintenance of the facilities. The cost of all normal maintenance and operation will be paid by Gas Alberta to the operator and included in the price of gas sold by Gas Alberta to the Co-operative, however, the Co-operative will be responsible for the cost of all replacement of capital plant.
2. If new additions or alterations to existing facilities are required, the Operator or the Co-operative will forward a written request for such addition or change to the Rural Utilities Branch. If the Rural Utilities Branch agrees that such change or addition is warranted, they will notify the Operator to perform the work and invoice the Co-operative for the cost of such work.

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES SUPPLEMENT NO. 6
JUNE 15, 1973

SUBJECT: FATHER-SON CONSUMERS

Although the option remains with the management of the rural gas distribution system to establish the terms and conditions of providing service, the following policy is suggested regarding services which supply more than one residence:

"Where more than one residence is located on the same farm, the owner of the farm may elect to apply for one membership and a single natural gas service.

In such a case, the consumer shall not be considered to be violating the Gas Service Contract which prohibits reselling or supplying gas to others.

If more than one service connection is required to provide service, the costs of the additional facilities shall be borne by the consumer."

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES SUPPLEMENT NO. 7
JUNE 15, 1973

SUBJECT: CALCULATION OF GRANT

To determine the per consumer costs for the purpose of establishing the grant per rural consumer the following procedure should be followed:

1. Calculate the Total Capital Cost of The System.
2. Subtract the Capital Cost of Transmission, Distribution and Services that is dedicated to the following consumers:
 - (a) Hamlets
 - (b) Incorporated Towns and/or Villages
 - (c) Commercial Consumers
 - (d) Industrial Consumers
 - (e) Other Heavy Users
3. Subtract a prorated portion of the Capital Cost of Transmission Plant that is shared by one or more of the following consumers:

(Note that the proration is to be on the basis of the average annual volume of the consumer compared to the average annual volume carried by the transmission line which is shared.)

 - (a) Incorporated Towns and/or Villages
 - (b) Commercial Consumers
 - (c) Industrial Consumers
 - (d) Other Heavy Users

(Note that no prorated portion of the Capital Cost of Transmission Plant shared by a Hamlet.

4. The Remaining Capital Cost is considered to be that portion of the Total System Capital Cost which is required to serve the following consumers:

- (a) Domestic Farm
- (b) Collective Farm (Equivalent to 5 Domestic Farm Consumers)
- (c) Non-Profit Consumers (Schools, community halls, churches, etc.)

(Note that this Remaining Capital Cost also includes the share of the Capital Cost of the Transmission Plant serving Hamlets.

5. The Remaining Capital Cost is divided by the Total Number of Domestic Farm and equivalent Domestic Farm Consumers to arrive at the per consumer Capital Cost on which the government grant is based. Note that Non-Profit Consumers are not included in the Total Number of Consumers for this purpose.

Example Calculation

1. Total Capital Cost of System		\$3,000,000
2. Capital Cost of Dedicated Plant		
(a) Hamlet	\$100,000	
(b) Incorporated Town or Village	0	
(c) Commercial	50,000	
(d) Industrial	300,000	
(e) Other Heavy Users	<u>10,000</u>	
TOTAL	\$460,000	\$ (460,000)
3. Prorated Portion of Capital Cost of Shared Plant		
(a) Incorporated Towns or Villages	\$ 0	
(b) Commercial	40,000	
(c) Industrial	90,000	
(d) Other Heavy Users	<u>10,000</u>	
TOTAL	\$140,000	\$ (140,000)
4. Remaining Capital Cost		\$2,400,000
5. Total Number of Domestic Farm Consumers or Equivalent		\$ 800
6. Per Consumer Construction Cost		\$ 3,000
Consumer Contribution		\$ 1,700
Government Grant		\$ 1,300

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES SUPPLEMENT NO. 8
JUNE 15, 1973

SUBJECT: SCHEDULE 2 - CONSUMERS PASSED, CONNECTED AND
REVENUE PROJECTION

The purpose of Schedule 2 is to show the planned rate of construction of the Distribution System and the planned rate of connecting Consumers and delivering gas to them so that operating revenues are generated.

"Consumers Passed" means the number of potential consumers who have been passed by a distribution line and therefore could be connected to the system if they chose to become a customer.

"Consumers Connected" means those consumers who have had their service connection made to a distribution line which is loaded with gas and therefore have become an active revenue generating customer.

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES SUPPLEMENT NO. 9

JUNE 25, 1973

SUBJECT: FEASIBILITY STUDY DRAWING SUBMISSION REQUIREMENTS FOR PRELIMINARY APPROVAL

To minimize the time required to check the drawings of a distribution system submitted for preliminary approval, the following minimum requirements are recommended:

- (a) All drawings should be on standard sized paper (i.e. 22" x 34" or 34" x 44") with a border.
- (b) Each drawing should have the title block in the lower right hand corner and the following minimal information should be in the title block: name of the Co-op, name of the consulting firm, date of drawing, date of each revision, name of draftsman, name of system designer, and the scale of the drawing.
- (c) The drawing should have a well defined North arrow and all ranges and townships should be marked clearly.
- (d) The minimum scale allowed should be 1" = 1 mile while the most desirable scale is 2" = 1 mile.
- (e) The proposed Co-op franchise area boundary should be a solid heavy dark line.
- (f) The design drawing should include a legend which clearly shows the symbols used for the various pipe sizes, pipe materials, and design loads used in CFH. Distinct and different symbols should be used so that any portion of the design may be thoroughly checked by this Department using the information shown

on the drawing which should be adequate for checking purposes.

The consultant may prefer to indicate each consumer's load at that location. A cross (i.e. X) should be marked on the pipeline whenever a change in line size occurs

(i.e. ————X————)

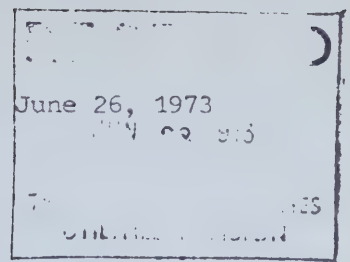
- (g) All rivers, creeks, lakes, railroads, major highways and secondary roads should be clearly identified. Also all sources of supply, whether these be wells or pipelines, should be clearly identified.
- (h) All feasibility studies and system design plans and drawings submitted to the Rural Utilities Branch for preliminary and/or final approval must bear the stamp and signature of a registered Alberta professional engineer.

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES SUPPLEMENT NO. 10

JUNE 26, 1973

SUBJECT: E.R.C.B. GAS CO-OPERATIVE PERMIT APPROVALS
PROPOSED INTERIM PROCEDURE



GAS COOPERATIVE PERMIT APPROVALS

Proposed Interim Procedure

- | | Day |
|---|-----|
| 1. Board receives permit application in preliminary form, including design criteria and map showing pipe line location and Cooperative boundary. System has received preliminary approval from the Department of Telephones and Utilities. | 0 |
| 2. Application is referred to the Department of the Environment and the Department of Lands and Forests with request to process immediately. Deficiencies, if any, discussed with the applicant and the Department of Telephones and Utilities. | 3 |
| 3. Department of the Environment and Department of Lands and Forests approve system in principle, subject to specified conditions and reserving the right to specify further conditions when a full review is completed. | 6 |
| 4. Board issues permit approving the plan in principle and granting specific authorization to construct on lands for which right of entry has been obtained through negotiation with the landowner. The permit will indicate that it may be subject to further conditions to be specified later. These conditions could include: <ul style="list-style-type: none">- environmental matters as determined by the Department of the Environment and the Department of Lands and Forests;- compliance with safety standards related to pipe quality and installation;- expansion or contraction of service area;- amendment of the permit after publication, referral and final design. | 7 |
| 5. Board publishes notice for information and opportunity for objections. | 10 |

6. Board would either rescind the first permit and replace with 30-40
new permit or amend the first permit, to incorporate final
conditions and adjustments after objections (if any) are
resolved and final input from Department of the Environment
and Department of Lands and Forests has been received.
7. Field inspection and testing.
8. Receive licence application with "as built" plans and issue
licence.

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES SUPPLEMENT NO. 11

JULY 10, 1973

SUBJECT: E.R.C.B. MEETING OF JULY 5/73 CONCERNING SUITABILITY OF
ALUMINUM PIPE FOR THE DISTRIBUTION OF NATURAL GAS

ENERGY RESOURCES CONSERVATION BOARD

603 SIXTH AVENUE S.W.

CALGARY, ALBERTA, CANADA

T2P 0T4

G. W. GOVIER, CHAIRMAN

D. R. CRAIG, VICE CHAIRMAN

V. MILLARD, VICE CHAIRMAN

J. I. STRONG, BOARD MEMBER

N. BERKOWITZ, BOARD MEMBER

TELEPHONE (403) 261-9800

TWX 610-821-6402

FILE: 28 PLG

July 10, 1973

Mr. Douglas A. Brooks
Technical Advisor
Department of Telephones and Utilities
#207, 10025 - 108 Street
Edmonton, Alberta
T5J 1K9



Dear Mr. Brooks

RE: Meeting of July 5/73 Concerning
Suitability of Aluminum Pipe for
the Distribution of Natural Gas

This letter is to confirm the policy of the Pipe Line Department concerning the proposed use of aluminum pipe and the new method of installing and welding this pipe.

The Pipe Line Department is prepared to permit the proposed pipe and method of installation providing that the pipe is protected with yellow jacket coating and as a minimum have leads attached suitable to add cathodic protection should this be proven to be necessary. The proposal would also have to meet all of the Board's routine requirements.

The permit would be marked as "experimental" to provide for future correction of any problems with a portion or all of the pipe line. The experimental label also provides us with a method of obtaining detailed information regarding any problems that may be encountered. This information is used to determine our future policy regarding applications for additional permits.

Please note that the use of aluminum pipe is not considered experimental, however the method of welding and installing is new and as such must go through a trial period. Any new process regardless of its apparent suitability is considered experimental until we have had experience with it in service.

The yellow jacket coating is required not just for corrosion prevention but to provide physical protection of the pipe as it passes through the plough as the bare aluminum has a tendency to gall.

ENERGY RESOURCES CONSERVATION BOARD

It is anticipated that the proposed installation will be successful if the pipe is installed following a detailed installation manual.

Should you require additional information please feel free to call.

Yours very truly

A handwritten signature in dark ink, appearing to read "E. G. Fox". The signature is fluid and cursive, with a prominent "E" and "F".

E. G. Fox, P.Eng.
Pipe Line Department

/a

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES SUPPLEMENT NO. 12

JULY 16, 1973

SUBJECT: E.R.C.B. INTERIM DIRECTIVE NO. ID-PL 73-1
POLYETHYLENE PLASTIC PIPE FOR NATURAL GAS SERVICE

THE PROVINCE OF ALBERTA
ENERGY RESOURCES CONSERVATION BOARD

Interim Directive
No. ID-PL 73-1

T0: All Plastic Pipe Manufacturers, Designers,
and Distributors of Natural Gas.

Polyethylene Plastic Pipe
For Natural Gas Service.

The purpose of this directive is to advise all plastic pipe manufacturers, designers, and distributors of natural gas, of the Board's requirements for the use of polyethylene plastic pipe in natural gas distribution systems. This directive, however, does not pertain to the manufacture, design or installation of polyvinyl chloride plastic pipe or fittings.

Section 1.00 hereof describes the design factors that may be used for polyethylene plastic pipe systems. Section 2.00 outlines the interim certification procedures that will permit phasing out of pipe and fittings not certified by the Canadian Standards Association. Section 3.00 sets out the requirements for certification after January 1, 1974. Section 4.00 outlines the procedures for upgrading existing polyethylene systems.

1.00 Design of Polyethylene Plastic Piping Systems

- 1.10 The design pressure for polyethylene plastic pipe transmitting natural gas is determined by the following formula:

$$P = 2S \frac{t}{(D-t)} \times F$$

where D = Specified outside diameter, inches
P = Design pressure, psig.
S = Long-term hydrostatic strength, psig.
t = Specified wall thickness, inches.
F = Design factor for polyethylene plastic pipe.

- 1.20 Where the polyethylene plastic pipe and fittings to be used are certified by the Canadian Standards Association, and the application for a permit includes a detailed description of procedures acceptable to the Board for handling, shipping, installation and testing of the polyethylene pipe and fittings to be used, the following values of the design factor "F" are acceptable to the Board.

F = 0.32 for Class 1 locations,

F = 0.25 for Class 2 locations.

- 1.30 Where the polyethylene plastic pipe and fittings to be used are not certified by the Canadian Standards Association, design factors of $F = 0.20$ for Class 1 locations and $F = 0.16$ for Class 2 locations will be accepted until January 1, 1974 for all new polyethylene plastic pipe line installations.
- 1.40 The maximum permissible operating pressure for the transmission and distribution of natural gas in polyethylene plastic pipe lines will be limited to 100 pounds per square inch gauge.
- 1.50 All single service lines within the property of the consumer are under the jurisdiction of the Gas Protection Branch of the Department of Labour and are subject to its requirements.

2.00 Interim Certification of Polyethylene Plastic Pipe and Fittings

Until January 1, 1974, as an alternative to the Canadian Standards Association certification referred to in Section 1.20, polyethylene plastic pipe and fittings may be used in natural gas distribution systems using modified design factors of

$F = 0.25$ for Class 1 locations,

$F = 0.20$ for Class 2 locations,

provided that evidence satisfactory to the Board is submitted to show that the manufacture of the polyethylene plastic pipe and fittings has been carried out under procedures equivalent to Canadian Standards Association certification standards. The equivalent certification standards must be carried out by a qualified third party inspection agency and must be certified by a Professional Engineer. Minimum certification requirements include:

- 2.10 documentary evidence of CSA certifiable raw material used in production of existing pipe stock;
- 2.20 factory assessment of quality control;
- 2.30 quality control records for each reel of pipe produced;
- 2.40 selective sampling of pipe from existing stock, comparison of dimensional characteristics with quality control records, and additional sampling if required dependent on results of initial sampling;
- 2.50 laboratory analysis of selected samples to check for
 - 2.51 carbon dispersion - content of carbon black and investigation of possible contamination, and

- 2.52 pressure tests - 1, 10, and 100 hour tests for effective long term strength analysis.

3.00 Continuing Certification of Polyethylene Plastic Pipe and Fittings

All polyethylene plastic pipe and fittings installed in natural gas systems after January 1, 1974, must have Canadian Standards Association certification. Interim certification based on equivalent procedures as outlined in Section 2.00 will not be acceptable after that date.

4.00 Upgrading Existing Polyethylene Systems

The Board will allow existing polyethylene plastic pipe gas distribution systems and systems installed in 1973 pursuant to Section 1.30 and Section 2.00 hereof to be upgraded to operating pressures determined from the new design factors only after:

- 4.10 application to and acceptance by the Board of a through engineering analysis of the system, with such analysis based on but not limited to
 - 4.11 quality of pipe and fittings;
 - 4.12 effective long-term strength;
 - 4.13 construction history;
 - 4.14 operating history;
 - 4.15 presence of pipeline condensate;
 - 4.16 use of organic de-icers and gas odorants;
 - 4.18 joint factors; and
 - 4.19 fracture toughness.
- 4.20 a requalification program based on the results of the engineering analysis, and on a program of pressure testing completed to the satisfaction of the Board.

For further information on any of the requirements of this Interim Directive, please contact the Board's Pipe Line Department.

ISSUED at Calgary, Alberta, on July 16, 1973.

ENERGY RESOURCES CONSERVATION BOARD

D. R. Craig
Vice Chairman

APPENDIX "A"

THE COOPERATIVE ASSOCIATIONS ACT

MEMORANDUM OF ASSOCIATION

	<u>NAME</u>	<u>ADDRESS</u>	<u>OCCUPATION</u>
WE, 1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____
8.	_____	_____	_____
9.	_____	_____	_____
10.	_____	_____	_____

do hereby express our desire to form an association under the provisions of The Cooperative Associations Act.

The corporate name of the Association is to be

The objects for which the Association is to be formed are:

- (a) The purchase of natural gas;
- (b) The construction and operation of pipe line distribution system for supplying natural gas to the members of the Association;
- (c) The sale and distribution of natural gas to the members of the Association;
- (d) The borrowing of money and securing the repayment thereof and the granting of such security on the assets of the Association as the directors may by resolution from time to time determine;

There is to be no share capital. The terms of membership shall be payment of a membership fee of one dollar (\$1.00), and the entering into a contract with the Association for the purchase of natural gas and the payment of the contribution to construction and extension pipe line costs as therein required, such contract to be in a form approved by the directors. The directors shall have the right to refuse membership to any person. Each member shall have an equal interest in the Association.

The number of directors who shall direct and supervise the concerns of the Association shall be seven (7) or such other number as shall from time to time be determined by the by-laws of the Association, and the names of such directors, until their successors are appointed under the by-laws of the Association are:

and the name of the place at which the head office or principal place of business is to be

_____, Alberta.

DATED the _____ day of _____, 19____.

WITNESS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

AFFIDAVIT OF EXECUTION

C A N A D A) I, _____
 PROVINCE OF ALBERTA) of _____
 TO WIT:) of the Province of Alberta, _____,
 make oath and say:

1. THAT I was personally present and did see

named in the within Supplemental By-Laws, who are personally known to me to be the persons named therein, duly sign and execute the same for the purposes named therein.

2. THAT the same was executed at
in the Province of Alberta, and that I am a subscribing
witness thereto.

3. THAT I know the said parties,

and they are each in my belief of the full age of twenty-one years.

SWORN BEFORE ME at)
in the Province of Alberta)
this day of)
A.D. 19 .) Signature of Witness

A COMMISSIONER FOR OATHS in and for
the Province of Alberta.

SUPPLEMENTAL BY-LAWS OF _____

1. The Standard By-laws shall apply to the Association except as hereinafter modified.
2. Standard By-Law No. 9 shall have the following additional paragraph:
 - (d) Any member withdrawing from the Association shall only have the right to be repaid his membership fee of \$1.00. Any contribution to construction and extension pipe line costs shall on such payments become and remain the sole property of the Association.
3. Standard By-Law No. 11 shall not apply to the Association and in lieu thereof shall be the following By-Law:
 11. (a) Surplus earnings, including surplus funds resulting from contributions to construction and extension pipe line costs, remaining in the hands of the Association at the end of any fiscal year shall be dealt with as follows:
 1. By setting aside necessary reserves;
 2. By paying if deemed advisable by the directors and at such rate as the directors may decide, interest to the members on their respective contribution to construction and extension line costs.

WE, the undersigned, being the subscribers to the Memorandum of Association of _____ hereby subscribe our names to the foregoing Supplementary By-Laws.

DATED the _____ day of _____, 19____.

Witness:

- | | |
|-------|-----------|
| _____ | 1. _____ |
| | 2. _____ |
| | 3. _____ |
| | 4. _____ |
| | 5. _____ |
| | 6. _____ |
| | 7. _____ |
| | 8. _____ |
| | 9. _____ |
| | 10. _____ |

AFFIDAVIT OF EXECUTION

C A N A D A) I, _____
PROVINCE OF ALBERTA) of _____
TO WIT:) of the Province of Alberta, _____,
make oath and say:

1. THAT I was personally present and did see

named in the within Memorandum of Association, who are personally known to me to be the persons named therein, duly sign and execute the same for the purposes named therein.

2. THAT the same was executed at
in the Province of Alberta, and that I am a subscribing
witness thereto.

3. THAT I know the said parties,

and they are each in my belief of the full age of twenty-one years.

SWORN BEFORE ME at)
in the Province of Alberta)
this day of)
A.D. 19 .) Signature of Witness

A COMMISSIONER FOR OATHS in and for
the Province of Alberta.

APPENDIX "B"

NATURAL GAS FOR RURAL ALBERTA

GUIDELINES

FEASIBILITY STUDY

1. The forms provided in this Appendix are intended to provide guidance as to the type of information and the amount of detail required.
2. Additional information may be provided if desired, but it should conform to a logical format and numbering system similar to that shown in the attached forms.
3. If Depreciation and Amortization expense are not included in the Operating Statement (Statement 2), then the Depreciation Projection (Schedule 4) and the Amortization Projection (Schedule 5) need not be submitted.
4. The forms provided permit entries for two periods. Additional columns may be attached in page size (8½" x 11") increments to a maximum of 14 columns. Computer printouts in a similar format are acceptable.
5. All pages associated with any Schedule or Statement must be numbered in sequence, dated and signed.
6. If more than one Case or Alternative is submitted, all Statements or Schedules must include the Case Number in the Title.

RURAL GAS SYSTEM
FEASIBILITY STUDY - INDEX

SYSTEM:

Feasibility Study Summary	Page(s)
Statement 1A - Balance Sheet, Assets	Page(s)
Statement 1B - Balance Sheet, Liabilities	Page(s)
Statement 2 - Operating Statement, Operations Cash Flow And Statement Of Retained Earnings	Page(s)
Statement 3 - Source And Use Of Funds	Page(s)
Schedule 1 - Construction Schedule And Expenditures	Page(s)
Schedule 2 - Consumers Passed, Connected And Revenue Projection	Page(s)
Schedule 3A - Cash Operating Expenses Projection	Page(s)
Schedule 3B - Cash Operating Expenses Projection	Page(s)
Schedule 4 - Depreciation Projection	Page(s)
Schedule 5 - Amortization Projection	Page(s)
Schedule 6 - Construction Costs	Page(s)
Schedule 7 - Construction Costs Summary	Page(s)

RURAL GAS SYSTEM
 FEASIBILITY STUDY SUMMARY

SYSTEM:

<u>1. GENERAL</u>			
1.1 Potential Consumers In Franchise Area			
1.2 Penetration (Per Cent)			
1.3 Consumers Served			
1.4 Gas Consumption (MCF/Consumer)			
1.5 Gas Consumption (MCF/Year)			
<u>2. INVESTMENT</u>		\$ PER MCF/YR	\$ PER CONSUMER
2.1 Construction Cost			\$ TOTAL
2.2 Consumer Contribution			
2.3 Government Grant			
<u>3. OPERATIONS</u>		\$ PER MCF	\$/YR PER CONSUMER
3.1 Gas Sales			\$/YR TOTAL
3.2 Consumer Service Charge (\$ /Mo.)			
3.3 Total Operating Revenues			
3.4 Gas Purchases			
3.5 Operating Expenses			
3.6 Total Operating Expenses			
3.7 Net Operating Surplus (Deficit)			

NOTES: (1)

STATEMENT 1A
 BALANCE SHEET
 ASSETS

SYSTEM:

.....

1. FIXED ASSETS

- 1.1 Land, Buildings and Equipment, at cost
- 1.2 Less: Accumulated Depreciation
- 1.3 Net Plant In Service
- 1.4 Plant Under Construction
- 1.5 Sub Total

2. CURRENT ASSETS

- 2.1 Cash
- 2.2 Accounts Receivable
- 2.3 Due From Members
- 2.4 Prepaid Expenses
- 2.5 Materials and Supplies at cost
- 2.6 Sub Total

3. INVESTMENTS

- 3.1 Sinking Fund
- 3.2 Depreciation Fund
- 3.3 Sub Total

4. DEFERRED CHARGES

- 4.1 Unamortized Debt Discount And Expense
- 4.2 Other
- 4.3 Sub Total

TOTAL ASSETS

STATEMENT 1B

BALANCE SHEET
LIABILITIES

SYSTEM:

.....

5. PROPRIETARY CAPITAL

5.1 Retained Earnings

6. LONG TERM DEBT

6.1 Bonds, Notes, Debentures

7. CURRENT LIABILITIES

7.1 Notes Payable

7.2 Accounts Payable

7.3 Customer Deposits, Advance Billing

7.4 Taxes Accrued

7.5 Interest Accrued

7.6 Dividends Payable

7.7 Sub Total

8. DEFERRED CREDITS

8.1 Customer Advances For Construction

9. OPERATING RESERVES

9.1 Property Insurance Reserve

9.2 Other (Specify)

9.3 Sub Total

10. CONTRIBUTIONS IN AID OF CONSTRUCTION

10.1 Government Grants

10.2 Member Contributions

10.3 Sub Total

TOTAL LIABILITIES

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=====

STATEMENT 2

OPERATING STATEMENT, OPERATIONS CASH FLOW
AND
STATEMENT OF RETAINED EARNINGS

.....

OPERATING STATEMENT

1. OPERATING REVENUES

1.1 Gas Sales (Sched. 2)
1.2 Service Charges (Sched. 2)
1.3 Other (Specify) (Sched. 2)
1.4 Total Operating Revenues

2. OPERATING EXPENSES

2.1 Operation And Maintenance (Sched. 3)
2.2 Depreciation (Sched. 4)
2.3 Amortization (Sched. 5)
2.4 Total Operating Expenses

3. NET OPERATING INCOME

4. OPERATIONS CASH FLOW

5. STATEMENT OF RETAINED EARNINGS

5.1 Balance (Deficit) At Beginning Of Year
5.2 Net Income (Loss) For The Year
5.3 Dividends
5.4 Balance (Deficit) At End of Year

() ()

SOURCE AND USE OF FUNDS

SYSTEM:

5. WORKING CAPITAL AT END OF YEAR

SCHEDULE 1

CONSTRUCTION SCHEDULE AND EXPENDITURES

SYSTEM:

.....

1. TRANSMISSION

1.1 Total Transmission Miles In Area

1.2 Transmission Miles Completed

(a) Period

(b) Cumulative

(c) Cumulative % Of Total

1.3 Total Transmission Cost In Area

1.4 Transmission Cost Per Mile

1.5 Transmission Cost Expended

(a) Period

(b) Cumulative

(c) Cumulative % Of Total

2. DISTRIBUTION

2.1 Total Distribution Miles In Area

2.2 Distribution Miles Completed

(a) Period

(b) Cumulative

(c) Cumulative % Of Total

2.3 Total Distribution Cost In Area

2.4 Distribution Cost Per Mile

2.5 Distribution Cost Expended

(a) Period

(b) Cumulative

(c) Cumulative % Of Total

3. TOTAL

3.1 Total Construction Cost In Area

3.2 Construction Cost Expended

(a) Period

(b) Cumulative

(c) Cumulative % Of Total

SCHEDULE 2

CONSUMERS PASSED, CONNECTED AND REVENUE PROJECTION

SYSTEM:

.....

1. CONSUMERS PASSED

1.1	Total Consumers In Area	_____	_____
1.2	Consumers Passed	_____	_____
	(a) Period	_____	_____
	(b) Cumulative	_____	_____
	(c) Cumulative % Of Total	_____	_____

2. CONSUMERS CONNECTED

2.1	Total Consumer Connections In Area ()	_____	_____
2.2	Consumer Connections	_____	_____
	(a) Period	_____	_____
	(b) Cumulative	_____	_____
	(c) Cumulative % Of Total In Area	_____	_____
	(d) Cumulative % Of Total Passed	_____	_____

3. REVENUE

3.1	Gas Sales	_____	_____
3.2	Service Charges	_____	_____
3.3	Other (Specify)	_____	_____
3.4	Total Revenue	_____	_____
	(a) Period	_____	_____
	(b) Cumulative	_____	_____

SCHEDULE 3A

CASH OPERATING EXPENSES PROJECTION

SYSTEM:

1. SALARIES AND WAGES2. EMPLOYEE BENEFITS3. DIRECTORS' FEES4. CONTRACT SERVICES

- 4.1 Legal
- 4.2 Accounting
- 4.3 Engineering
- 4.4 Computer
- 4.5 Clerical
- 4.6 Other (Specify)

5. LAND AND BUILDINGS

- 5.1 Rent
- 5.2 Maintenance

6. VEHICLES

- 6.1 Rent
- 6.2 Maintenance
- 6.3 Operation
- 6.4 Insurance

7. EQUIPMENT

- 7.1 Rent
- 7.2 Maintenance
- 7.3 Operation
- 7.4 Insurance

8. OFFICE FURNITURE AND EQUIPMENT

- 8.1 Rent
- 8.2 Maintenance

SCHEDULE 3B

CASH OPERATING EXPENSES PROJECTION

SYSTEM:

.....

10. TRAVEL

.....

11. ENTERTAINMENT

.....

12. ADVERTISING AND PROMOTION

.....

13. COMMUNICATIONS

13.1 Telephone

.....

13.2 Telegraph

.....

13.3 Teletype

.....

13.4 Postage And Delivery

.....

14. UTILITIES

14.1 Heat

.....

14.2 Electricity

.....

14.3 Water

.....

14.4 Sewer

.....

15. OFFICE SUPPLIES

.....

16. LIBRARY AND SUBSCRIPTIONS

.....

17. MEMBERSHIP DUES

.....

18. LICENSE FEES

.....

19. FRANCHISE FEES

.....

20. INSURANCE

.....

21. CHARITABLE DONATIONS

.....

22. BAD DEBTS

.....

23. TAXES

23.1 Business

.....

23.2 Property

.....

24. INTEREST AND BANK CHARGES

24.1 Interest

.....

24.2 Exchange

.....

24.3 Service Charge

.....

25. OTHER (SPECIFY)

.....

26. TOTAL CASH OPERATING EXPENSES

.....

SCHEDULE 4

DEPRECIATION PROJECTION

SYSTEM:

ITEM:

.....

1. BALANCE AT BEGINNING OF YEAR

2. ADDITIONS

3. RETIREMENTS

4. BALANCE AT END OF YEAR

5. DEPRECIATION RATE

6. DEPRECIATION EXPENSE

7. ACCUMULATED DEPRECIATION EXPENSE
AT BEGINNING OR YEAR

8. ACCUMULATED DEPRECIATION EXPENSE
AT END OF YEAR

SCHEDULE 5

AMORTIZATION PROJECTION

SYSTEM:

ITEM:

.....

1. BALANCE AT BEGINNING OF YEAR

2. ADDITIONS

3. RETIREMENTS

4. BALANCE AT END OF YEAR

5. AMORTIZATION RATE

6. AMORTIZATION EXPENSE

7. ACCUMULATED AMORTIZATION EXPENSE
AT BEGINNING OF YEAR

8. ACCUMULATED AMORTIZATION EXPENSE
AT END OF YEAR

SCHEDULE 6

..... 19.....

CONSTRUCTION COSTS

BY.....

PAGE..... OF.....

SYSTEM:

1. TRANSMISSION

1.1 Metering			
(a) Taps	 @	/tap	.....
1.2 Pipe Steel			
(a) 1½"	mi.@	/mi.	.....
(b) 2"	mi.@	/mi.	.....
(c) 3"	mi.@	/mi.	.....
(d) 4"	mi.@	/mi.	.....
1.3 Land			
(a) Survey	mi.@	/mi.	.....
(b) Easements	mi.@	/mi.	.....
(c) R. of W. Damage	mi.@	/mi.	.....
1.4 Other			
(a) .....			.....
(b) .....			.....
1.5 Total Transmission Material And Labour Cost			.....
1.6 Total Transmission Miles			.....

2. DISTRIBUTION

2.1 Regulation			
(a) Boxes	 @	/box	.....
2.2 Pipe Plastic			
(a) 3/4"	mi.@	/mi.	.....
(b) 1½"	mi.@	/mi.	.....
(c) 2"	mi.@	/mi.	.....
2.3 Hamlet Distribution Systems			
(a) Consumers	 @	/cons.....	
2.4 Special Charges			
(a) Road Crossings	..... @		.....
(b) Hi-way Crossings	..... @		.....
(c) Misc. Crossings	..... @		.....
(d) Brushing & Clean-up	mi.@	/mi.	.....
(15% of mi. where applicable)			
2.5 Land Costs			
(a) R. of W. Damage	mi.@	/mi.	.....
2.6 Consumer Costs			
(a) Easement Registration	 @	/ease.....	
(b) Rural Service Line	 @	/line.....	
(c) Hamlet Service Line	 @	/line.....	
(d) Meter & Regulator	 @	/cons.....	
2.7 Total Distribution Material And Labour Cost			.....
2.8 Total Distribution Miles			.....

3. SUB-TOTAL TRANSMISSION AND DISTRIBUTION COSTS

: : : : : :

4. CONTINGENCY AT% OF 3.

: : : : : :

5. ENGINEERING & OVERHEAD AT% OF 3.

: : : : : :

6. TOTAL CAPITAL COST

: : : : : :

SCHEDULE 7

CONSTRUCTION COSTS SUMMARY

SYSTEM:

7. SUMMARY

7.1	Transmission	
	(a) Capital Cost	.....
	(b) Miles	.....
	(c) Cost Per Mile	.....
7.2	Distribution	
	(a) Capital Cost	.....
	(b) Miles	.....
	(c) Cost Per Mile	.....
7.3	Number of Consumers	.....
7.4	Consumers/Distribution Mile	.....
7.5	Total Capital Cost/Consumer	.....

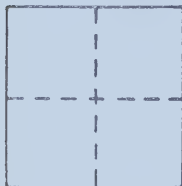
NOTE: 1. Average Service Line Length -
 (a) Rural Feet
 (b) Hamlet Feet

DEPOSIT/REFUSAL FORM

APPLICATION FOR MEMBERSHIP AND NATURAL GAS SERVICE

_____, Gas Co-op Ltd. _____, 19____
 _____, Alberta

1. I, _____, of (Address) _____
 _____ in the Province of Alberta, hereby apply for
 membership in the _____ Gas Co-op Ltd.,
 and enclose my membership fee in the sum of \$1.00.
2. Please consider this my application for natural gas service on the
 location diagrammed below, and enclosed find a deposit in the sum of
 \$_____, which sum is to be credited toward my construction
 fee. In the event that this application is not accepted, this deposit is
 to be refunded.
3. Upon acceptance of this application, the applicant must complete and sign
 a service contract outlining installation charges, gas rates, and all
 other conditions of service, before commencement of construction.



_____ $\frac{1}{4}$ Sec. _____ Twp. _____ Rg. _____ W _____ Meridian

 Witness

 Applicant

 Witness

per: _____
 _____ Gas Co-op Ltd.

REFUSAL OF NATURAL GAS SERVICE

_____, 19____

1. I, _____, of (Address) _____
 _____ in the Province of Alberta, have been
 approached by a representative of the Board of Directors of
 _____ Gas Co-op Ltd., and all terms and
 conditions under which they propose to make natural gas service
 available to me, including any possible surcharge which might be made
 on any future application, in accordance with the Rural Gas Policy,
 have been fully explained to me.
2. Independent of all other influences, I have decided to refuse the
 proposed natural gas service at this time.
3. This refusal will not prejudice any future application for natural gas
 service. Such application will be made subject to such terms and
 conditions as exist at that time.

 Witness

 Signature

(3)

THE CO-OPERATIVE MARKETING ASSOCIATIONS GUARANTEE ACT

Form 1
(Section 11)

MEMBER'S LIEN NOTE

I, _____ of _____ in the
Province of Alberta, a member of the _____ Gas Co-op Limited,
hereby promise to pay to the _____ Gas Co-op Limited,
within _____ years from the _____
day of _____ A.D. 19____, being the day from which interest shall be computed, the following
sum, that is _____ dollars
(hereinafter called the principal) with interest at the rate of _____ per cent per annum, the principal
to be repayable in instalments as follows:

1st instalment	_____ dollars on the _____ day of _____	19____
2nd instalment	_____ dollars on the _____ day of _____	19____
3rd instalment	_____ dollars on the _____ day of _____	19____
4th instalment	_____ dollars on the _____ day of _____	19____
5th instalment	_____ dollars on the _____ day of _____	19____
6th instalment	_____ dollars on the _____ day of _____	19____
7th instalment	_____ dollars on the _____ day of _____	19____
8th instalment	_____ dollars on the _____ day of _____	19____
9th instalment	_____ dollars on the _____ day of _____	19____
10th instalment	_____ dollars on the _____ day of _____	19____

together with accrued interest on the unpaid principal on each of the above dates, I shall pay instalments
when due to _____
at _____ in the Province of Alberta.

DESCRIPTION OF LAND _____ 1/4 SECTION _____ TOWNSHIP _____ RANGE _____ W _____ M

Dated at _____, on the Province of Alberta, this _____
day of _____, 19____.

The above was made and signed in my presence	)	_____
	)	SIGNATURE OF MEMBER
by the said _____	)	
	)	_____
this _____ day of _____	)	SIGNATURE OF OFFICER
	)	
19____	)	_____
	)	GAS CO-OP LIMITED

APPENDIX "E"

GAS SERVICE CONTRACT BETWEEN CO-OP AND CUSTOMER

ASSOCIATION LIMITED

(herein called "The Association")

GAS SERVICE CONTRACT

TO: THE ASSOCIATION

I, _____ of M.D. of _____
(In Block Letters)

Post Office _____ in the Province of Alberta,

(herein called "The Consumer"), being the registered owner (purchaser, lessee) (cross out inappropriate word) of:

(hereinafter called "the said lands") (Give full legal description of all lands owned, under purchase or leased) request the Association to construct at the expense of the member, the necessary extension from the point most convenient to the Association, on its existing or proposed gas distribution system to the service meter on the consumer's premises, situated on the _____ of Section _____ in Township _____ Range _____ West of the _____ Meridian, in the Province of Alberta, and to supply the consumer with gas as hereinafter provided. Upon the acceptance of this application by the Association, the consumer agrees forthwith to undertake at his own expense the piping within his buildings and to purchase gas from the Association as soon as it is available, at the rates applying to this class of services which are now or may from time to time hereafter be in force, and subject to the following terms and conditions:

1. AVAILABILITY: This service is available only for use in farming operations or for domestic purposes in the farmstead to bona fide members who have made payment of \$1.00 as membership fee. The member agrees not to use the natural gas supplied hereunder for any other purpose. The Association will not accept new consumers on terms as to cost and contribution providing for amounts less than the amounts stated in Clause 2 hereof, or alternatively, for amounts less than the average membership cost. An application must be made in writing to the Board of Directors before a member may have his property serviced.
2. CONSTRUCTION COST: (a) The consumer shall by making this application become liable to pay to the Association the sum of \$ _____ as his share of the estimated construction cost of the distribution system of the Association, including the estimated average cost of the line extensions to the service meters of the consumers of the Association. In the event that the line extension to the service meter of the consumer exceeds _____ feet, the consumer shall, in addition, pay to the Association and tender with this application the sum of _____ ¢ for each foot in excess of the said distance of _____ feet being the estimated construction cost thereof which amounts to \$ _____. The consumer shall at the time of making this application pay to the Association a down payment of \$ _____ on the total liability \$ _____ as aforesaid and the balance of \$ _____ in equal annual deferred payments of \$ _____ each, the first of such payments to be made on the _____ day of _____, 19____, such balance from time to time to bear interest at the rate of _____ % per annum and the said interest shall be due and payable on the dates for payment of the deferred payments. The consumer shall give such security to

secure the payments of the said balance and interest thereon as the Directors of the Association may by resolution require. Any deferred payments may be made before the time of payment thereof. In the event of the sale of the said lands by the Consumer, any of the said payment not already paid and any outstanding interest shall forthwith become due and payable by the consumer, unless the purchaser of the said land, contemporaneously with such sale, shall have made an application for service in accordance with Clause 17 hereof and such application has been accepted by the Association and a Gas Service Contract duly executed.

(b) In the event that the actual cost of the works described exceeds the estimated cost thereof the consumer shall forthwith pay to the Association on demand his share of the difference between the estimated cost and the actual cost. The consumer shall be repaid the excess, if any, of the estimated cost over the actual cost of that portion of the extension paid for by the consumer on a footage basis, provided that in the event of the sale of the said lands before repayment of any such excess the new consumer-purchaser shall be entitled to repayment thereof if he has executed a Gas Service Contract with the Association for service on the said lands.

3. RIGHT-OF-WAY: The Association shall have and it is hereby granted, an easement for right-of-way for locating, erecting and maintaining and removing its distribution system including the right to carry out the necessary trimming and cutting of trees and brush, on and over such part of the said lands as may be necessary to complete the connection required for serving the consumer, and for any continuation of or branch from such extension as the Association for its reasonable convenience, requires to enable it to serve other consumers. Such extensions, continuations or branches will, if possible with due consideration of cost, be located according to the consumer's wishes. The easement hereby granted shall be a covenant running with the land and shall continue in full force and effect for as long a period as the Association, its successors and assigns, desires and continues to maintain and operate distribution lines across the said lands, notwithstanding the discontinuance of service or the termination of the contract.
4. TITLES: The title to the distribution system, including the extension to serve consumers, shall be vested in the Association notwithstanding the contribution to the cost hereof made by the consumer. The Association shall have the right to make use of and/or continue the said line extension for the purpose of serving other consumers.
5. MAINTENANCE: _____ shall perform all maintenance and make renewals or replacements as it sees fit to so do. The aforementioned utility company will not, however, be responsible for repairs, renewals, replacements or maintenance of the consumer's piping or equipment within his premises.
6. NON-LIABILITY: The Association shall incur no liability by reason of failure to supply natural gas from any cause, nor shall it be liable for loss, costs or damage to persons or property arising or resulting from the supply or use of natural gas.

7. WARNING AND INDEMNITY: The Consumer and/or member is hereby warned of the danger from contact with any point of the Association's line or equipment, and he shall at all times exercise every precaution necessary to prevent any damage to said lines and equipment. In the event of any accident, injury or damage occurring by reason of tampering, full responsibility therefore as between the Association and the member shall be upon the member and the member shall at all times indemnify and save harmless the Association from any and all claims for damages arising by reason of any such accident, injury or damages.

The member shall be responsible for all damages to lines and equipment.

8. PIPING WITHIN PREMISES: The consumer shall install piping within his own premises, including the piping from the place of delivery to the buildings, and shall assume all risk and responsibility in respect to such piping and his equipment and the protection of the same. The consumer agrees that any such piping shall be done in conformity with any laws, statutes, bylaws or regulations relating to gas fitting applicable in the Province of Alberta, and in conformity with the rules of the Board of Fire Underwriters and of the Association. The Association shall have the right to inspect any such piping and installations before commencing to supply natural gas to the consumer, but shall be under no duty to make any such inspection. Any such inspection shall not relieve the consumer of his responsibility in respect of such piping and installation, or in respect of any of his equipment or appliances.
9. METERS: (a) For measuring natural gas _____ will install the consumer's meter and necessary apparatus. The meter shall be the Point of Delivery of natural gas by _____.

(b) All meters shall be government inspected and tested before installation and at such other times as are required by law. The consumer may request that a meter be submitted to the Department of Weights and Measures for testing, upon _____ day's written notice to the Association, accompanied by a deposit of \$ _____.

If the meter is found to be true and accurate within the limits prescribed from time to time by the said Department, the cost of such tests shall be borne by the consumer. If the meter is found not accurate within the limits prescribed by said Department, it shall forthwith be corrected or replaced by an accurate meter. The consumer's meter test deposit of \$ _____ shall be returned, and the cost shall be borne by _____ and the bills for the preceding _____ months shall be corrected accordingly.

10. ACCESS: The Association, and the vendor of natural gas to the Association, their respective servants, agents, and nominees shall have the right of free access to the consumer's premises at all reasonable times for the purpose of reading meters, and for the purpose of inspecting any of the lines, equipment or appliances upon the consumer's premises whether the same are the property of the Association or of the consumer, and for the purpose of repairing or maintaining the same or of removing all or any part of the same which are the property of the Association.

11. METER READING AND BILLING: The meters will be read monthly, quarterly or as _____ may otherwise elect, and _____ may at its option require the consumer to read his own meter and report such reading on a suitable form to be provided by the Association. _____ will render a statement of the consumer's accounts after each such meter reading and the same shall be due and payable when rendered.
12. RESALE: The consumer shall have no right to resell or to supply to any person whatsoever any natural gas delivered to him under the terms of this contract.
13. RATES: The rate shall be that rate which prevails from time to time in the rate areas in which the members of the Association are located and shall be subject to jurisdiction by the Board of Public Utility Commissioners. The present rate shall be: _____
14. DISCONTINUANCE OF SERVICE: The Association shall have the right to discontinue or refuse to continue the supply of natural gas to the consumer for any of the following reasons:
- (a) On account of lack of supply of natural gas;
 - (b) for repairs;
 - (c) for defective piping conditions which in the opinion of the Association are dangerous to life or property;
 - (d) on account of or to prevent fraud or abuse or the resale or supply to others of natural gas;
 - (e) for non-payment of any account when due, or upon the insolvency of the consumer, or upon his making a voluntary assignment;
 - (f) for the use by the consumer of any natural gas appliances not in conformity with the provisions of the contract;
 - (g) for any breach by the consumer of any of the provisions of this contract.
- The discontinuance of the supply of natural gas for any of the reasons aforesaid shall in no way affect the rights of the Association under the Contract. The Association shall have the right to charge a consumer a reconnection fee of \$ _____ before the supply of natural gas is reconnected after any discontinuance for any of the reasons set out in subparagraphs (c) and (g) inclusive; it being understood that the Association in its discretion may refuse to reconnect any service where the same has been discontinued for any of the foregoing causes.
15. TERM: This contract shall be for a term of _____ years from the date service is made available to the consumer and thereafter shall continue in force from year to year subject to termination at the end of any such year by either party giving to the other party at least thirty (30) day's notice in writing.
16. VERBAL AGREEMENTS: No promises, agreements or representations of any agent or employee of the Association shall be of any binding force or effect whatsoever unless the same shall be incorporated in this agreement before it is signed and accepted by the Association.

17. TRANSFER OF AGREEMENT: Contracts shall not be transferable by the consumer. Any person taking over the consumer's premises shall (provided that all accounts are paid) be entitled to make a new application for service and shall not be required to pay to the Association any construction contribution which has already been paid by the consumer, as hereinbefore provided. The Association, before accepting any such application, may, however, require the applicant to make payment of any deferred payments and interest thereon with respect to the construction contribution which have not been paid by the consumer.
18. ASSOCIATION'S AGENTS: Notwithstanding anything herein contained it is covenanted and agreed that the Association shall be entitled to assign all or any part or parts of this agreement and with or without any such assignment from time to time to appoint, employ or engage any person, firm or corporation to do any act or thing which the Association is required or entitled to do hereunder, either in its own name or in the name of the Association. In the event that such person, firm or corporation is to act in its own name, written notice of such appointments, employment or engagement shall be forwarded to the consumer by ordinary mail at the address aforesaid.
19. IT IS UNDERSTOOD AND AGREED that the Association is at all times subject to the jurisdiction of the Board of Public Utility Commissioners as provided in the Public Utilities Act of the Province of Alberta.
20. IT IS UNDERSTOOD that subject to Section 17 aforesaid this Agreement shall enure to the benefit of and be binding upon the Association, its successors and assigns and the consumer, his executors and administrators, and that wherever the singular or masculine is used herein the same shall be construed as meaning the plural or feminine or a body corporate where the context or parties hereto so require and that if the consumer be two or more parties the agreement on their part shall be deemed to be joint and several.
21. IT IS FURTHER UNDERSTOOD AND AGREED that when executed by the proper officers of the Association, this application shall constitute a binding contract. The Association at all times reserves the right to refuse any application except as provided in Clause 17 hereof and upon such refusal, shall forthwith return the money tendered with this application.
22. This contract is made subject to all of the provisions of the Agreement made between the Association and _____ dated _____, 19____, and the consumer hereby agrees with the Association and the said Company to accept all of the provisions of that Agreement which affect him, Mutatis Mutandis as though incorporated herein in full.

IN WITNESS WHEREOF the parties hereto have executed these presents as
of the _____ day of _____, 19_____.

(Consumer's Signature)

Rural Gas Association Limited

Per (Corporate Seal)

In the Presence of:

CONSENT

I, _____, wife of the above named
consumer, hereby give my consent to the foregoing agreement and the
terms and conditions thereof.

Signature of Consumer's Wife

I, _____, the owner of the land
hereinbefore mentioned in order to induce _____
Rural Gas Association Limited to enter into the above contract, do
hereby consent and approve thereof, and in particular agree to be
bound by and join in the provisions thereof relating to Gas Pipe lines
and the grant of rights-of-way therefore, but without rendering myself
liable for payments agreed to be made by the consumer therein named.

Dated at _____, this _____ day of _____ A.D. 19____

Signature of Owner
(if consumer is not the registered
owner)

I, _____, wife of the above named
owner, hereby give my consent to the foregoing agreement of the owner.

Signature of Wife of Owner
(if consumer is not the registered
owner)

APPENDIX "F"

PIPELINE EASEMENT

I, _____ of _____ in the Province of Alberta, hereinafter called the "Grantor", being the registered owner, or entitled to become the registered owner of an estate in fee simple in all that certain tract of land more particularly described as follows:

Hereinafter referred to as the "said lands";
WHEREAS the _____ Gas Co-op Limited, hereinafter called the "Grantee" proposes to furnish natural gas service to its members, by means of a rural pipeline, hereinafter referred to as the "said pipeline", IN CONSIDERATION of the sum of One Dollar (\$1.00) in lawful money of Canada or its equivalent (receipt of which sum the Grantor hereby acknowledges) paid to the Grantor by the Grantee, do hereby agree to the following terms and conditions:

1. The Grantor does hereby grant, transfer and convey unto the Grantee, its contractors or agents, the right of easement to enter upon the said lands for the purpose of constructing, operating and maintaining, and/or reconstructing the said pipeline, including such appurtenances and/or buildings as may be necessary or convenient in connection therewith, for such period and in such places as the Grantee shall deem necessary to furnish the aforesaid gas service.
2. The Grantee shall pay to the Grantor reasonable compensation for damages to growing crops, fences, and livestock occurring as a result of the aforementioned operations, and as soon as weather and soil conditions permit, the Grantee will, insofar as it is practical to do so, restore the said lands to their condition prior to the Grantee's entry thereon.
3. The said pipeline, notwithstanding any rule at law or in equity, even though attached to the land, shall remain the property of the Grantee, with full rights of access for purposes of operation, maintenance and inspection, including the right of quiet enjoyment.
4. This easement agreement shall be deemed to have created a covenant running with the land, binding upon heirs, successors and assigns of the parties hereto, and may be assigned in whole or in part.

IN WITNESS WHEREOF, I the Grantor have hereunto set my hand and seal this _____ day of _____, 19____.

Signed by the said
in the presence of

Witness

) _____
) Grantor
) _____
) Grantor

per: _____

Seal

per: _____

APPENDIX "G"

GAS PURCHASE CONTRACT BETWEEN CO-OP AND GAS ALBERTA

The Gas Purchase Contract between Gas Alberta as "seller" and the Co-op as "buyer" is currently being redrawn, and will be published as a supplement to the Guidelines at a later date.

APPENDIX "H"

FORM A
(Section 6)
APPLICATION FOR A PERMIT

To: Energy Resources
Conservation Board.

(name of applicant)

(address)

hereby makes application for a permit to construct a _____
_____ line for the transmission of _____

from a point in or about _____
to a point in or about _____

and the proposed route is coloured in red on the plan accompanying this application.

Dated _____.

per _____

FORM B
(Section 6)
SPECIFICATION SHEET
For A Secondary Line

(name of applicant)

1. Outside diameter of pipe and wall thickness.
2. Pipe specifications.
3. Minimum yield strength of pipe.
4. Is pipe new or used.
5. Maximum operating pressure in psig.
6. Proposed field test pressure in psig.
7. Design capacity.
8. Specifications of fittings and valves.
9. Minimum earth cover.
10. Protective coating.
11. In the case of a secondary line for gas, where percentage of hydrogen sulphide will be 1% or more by volume, show percentage by volume of:
 - (a) hydrogen sulphide;
 - (b) carbon dioxide;
 - (c) water.
12. Remarks

per _____

Note: A separate specification sheet is required for each size of pipe to be used.

or

SPECIFICATION SHEET
For A Gas Line

(name of applicant)

1. Outside diameter of pipe and wall thickness.
2. Pipe specifications.
3. Minimum yield strength of pipe.
4. Is pipe new or used.
5. Maximum operating pressure in psig.
6. Proposed field test pressure in psig.
7. Design capacity in MCF per day or MMCF per day.
8. Specifications of fittings and valves.
9. Minimum earth cover.
10. Protective coating.
11. Inlet pressure in psig.
12. Outlet pressure in psig.
13. Where percentage of hydrogen sulphide will be 1% or more by volume, show percentage by volume of:
 - (a) hydrogen sulphide;
 - (b) carbon dioxide;
 - (c) water.
14. Remarks

per _____

Note: A separate specification sheet is required for each size of pipe to be used.

APPENDIX "I"

STANDARDS

All work performed and material used in the design, construction and operation of a rural gas system must comply with the Federal, Provincial and local laws, regulations, ordinances, standards, codes and specifications, and in particular without restricting the generality of the foregoing, shall comply with the latest revision of the following:

The Forest Act

The Pipe Line Act

The Gas Protection Act

Boiler and Pressure Vessels Act

CSA Z184 Gas Transmission and Distribution
Piping Systems

CSA B137.0 Definitions, General Requirements and
Methods of Testing for Thermoplastic
Piping

CSA B137.4 Thermoplastic Piping Systems for Gas
Service

CSA B134.14 Recommended Practise for the Installation
of Thermoplastic Piping for Gas Service

CSA Z169 Code for Aluminum Pressure Piping

CSA B149.1 Installation Code for Natural Gas Burning
Appliance and Equipment

API 1104 Standard for Welding Pipelines and
Related Facilities

Date Due

~~27 1978~~

~~1002 2 1978~~



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